

Seven new *Acestrorhynchin* Characid species
(Osteichthyes, Ostariophysi, Characiformes)
with comments on
the systematics of the group

by

Naercio A. MENEZES * and Jacques GERY **

With 9 figures

ABSTRACT

Four new species of *Oligosarcus* Günther, 1864, and three new species of *Acestrorhynchus* Eigenmann & Kennedy, 1903, are described. The monotypic genus *Paroligosarcus* Campos & Trewavas, 1949, is considered synonymous with *Oligosarcus*. The relationships between *Oligosarcus* and *Acestrorhynchus* are briefly discussed based on preliminary findings obtained from reexamination of all species. It is suggested that *Acestrorhynchinae* might not be a monophyletic group. As a result of the inclusion of new species and of the modifications suggested, new keys to the species of *Oligosarcus* and *Acestrorhynchus* are presented. Localities of recently collected material which extend the distribution of some species are listed.

INTRODUCTION

Examination of material of the genera *Oligosarcus* and *Acestrorhynchus* recently collected in South America (Brazil and Bolivia) revealed the presence of seven new species which are described in this paper.

* Museu de Zoologia, Universidade de São Paulo, Caixa Postal 7172, 01000, São Paulo, Brazil.

** Argentonnesse, Castels, 24220 Saint Cyprien, France.

The data provided by these species and a reexamination of the species previously studied has allowed a reinterpretation of the systematic arrangement proposed by Menezes (1969, 1976: 20).

For making specimens available for this work we thank the following persons: Dr. Fritz Terofal, curator of the Zoologische Staatssammlung München, Germany; Dr. Claude Gosset, member of the French Scientific Expedition to Brazil made in 1978 under the International Cooperation Program between the National Research Council of Brazil and the Centre National de la Recherche Scientifique, Paris, France; Dr. Michael Goulding, Museu Goeldi, Belém, Pará, Brazil; and Mr. José Maria Moura Gomes, Curitiba, Paraná, Brazil, responsible for the faunistic survey carried out by Superintendência de Recursos Hídricos do Meio Ambiente (SUREHMA). We are especially grateful to Dr. Stanley H. Weitzman, Division of Fishes, Smithsonian Institution, U.S.A., for the photographs of all species. Dr. William Fink and Sara Fink read the manuscript and offered valuable comments and suggestions. Luiz Paulo Stockler Portugal typed the tables and the manuscript and helped with the illustrations.

METHODS AND MATERIALS

The specimens studied have been deposited in the following museums: Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZUSP); National Museum of Natural History, Smithsonian Institution, Washington D.C., U.S.A. (USNM); Zoologische Staatssammlung München, Germany (ZSM); Muséum d'Histoire Naturelle de Genève, Switzerland (MHNG); and Muséum National d'Histoire Naturelle, Paris, France (MNHN).

The methods for counts and measurements are those used by MENEZES (1969). The number of fin rays in the tables includes only branched elements, and the number of vertebrae includes the four vertebrae associated with the Weberian apparatus and the terminal complex centrum. All morphometric values in the descriptions and in the tables are expressed as percentages of the standard length, unless otherwise indicated. Differences between species or samples were evaluated using Student's *t* test on square root transformed meristic data and on regressions of morphometric data. The regressions were computed through routine statistical methods. Data from other species introduced for comparisons are from MENEZES (1969).

Oligosarcus planaltinae sp. n. (Fig. 1)

Holotype: MZUSP 25718 (female, 99.0 mm S.L.), collected in Córrego Planaltina, a tributary of the Rio São Bartolomeu (Paraná river system) near Brasília, State of Goiás, Brazil, August 1965 by H. Schultz.

Paratypes: ZSM 26092-93 (2, 52.5-71.0 mm); MHNG 2098.12 (1, 54.0 mm); all taken with the holotype.

Diagnosis

O. planaltinae has considerably fewer scales on the lateral line (38-40, $X = 39.2$) than any other species of *Oligosarcus*. With respect to this character and in body shape it is close to "*Paroligosarcus*" *pintoii*, but it does not have the large tricuspid teeth on the premaxillary and the large tricuspid to pentacuspid teeth on the dentary of this species (these teeth are all conical in *O. planaltinae*), and in addition its lower jaw is included, not longer than the upper jaw when the mouth is closed.

Description

Body comparatively small (S.L. 54.0-99.0 mm), compressed. Dorsal and ventral outlines of body almost equally curved; predorsal profile convex, concave at the nape. Snout conical, shorter than orbital diameter; lower jaw protruding slightly when mouth is open or included in upper jaw when mouth is fully closed, so that anteriormost large premaxillary conical teeth are outside mouth, but in contact with tip of jaw. Maxillary curved, narrow anteriorly, becoming progressively wider posteriorly, with 24-27 slightly tricuspid teeth; posterior tip of maxillary reaching to or slightly beyond a vertical line drawn through the posterior border of the pupil of the eye. Premaxillary with a

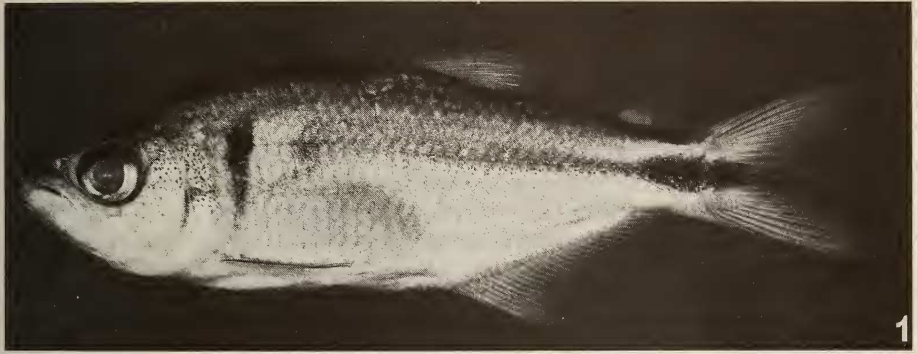


FIG. 1.

Oligosarcus planaltinae, sp. n., ZSM 26093, SL 71.0 mm, paratype, male.

large caniniform tooth in front followed, along its external border, by 4 small, slightly tricuspid teeth, 1 large posterior conical tooth and 1 small slightly tricuspid tooth; there is a conical tooth half the size of the large anterior conical tooth internal to the row of 4 tricuspid teeth. Dentary with a large caniniform tooth in front, followed by 3 widely spaced conical teeth, the size of which increases gradually from the first to the third, the last being only slightly smaller than the large anterior tooth, and then a row of 13-16, small, slightly tricuspid teeth. Ectopterygoid bearing a row of 10-18 slightly tricuspid teeth. The lateral cusps of the tricuspid teeth on the maxillary, premaxillary, dentary and ectopterygoid are variously reduced, sometimes vestigial, and one of them may be absent in some teeth. Gill rakers 13-14 on lower limb of first gill arch.

Lateral line complete, with 38-40 scales; 8 scale rows from dorsal fin origin to lateral line, 7 from anal fin origin to lateral line. A single row of scales along anal fin base, extending to about the middle of the fin.

Dorsal fin rays ii, 9; dorsal fin origin nearer to caudal fin base than to tip of snout. Anal fin with iv, 24-26 rays, its origin on a vertical line drawn ventrally from posterior end of dorsal fin base; spines present on anal fin rays of males, not extending beyond the first half of the fin; margin of anal fin concave. Caudal fin lobes equally developed, the number of principal caudal rays i, 17, i. Pelvic fins with i, 7 rays, tip of longest ray reaching beyond anus but not reaching origin of anal fin. Pectoral fin rays i, 13-14, tip of longest ray reaching beyond pelvic fin origin.

Color in alcohol dark brown on top of the head and dorsum, light brown on the sides and pale on belly; cheek, postorbital region and opercles with scattered black pigment; a dark vertically elongate humeral blotch, wider and more densely pigmented above; an inconspicuous dark silvery lateral stripe above lateral line, becoming enlarged and blacker on the caudal peduncle and extending onto the middle caudal fin rays; on the caudal fin base the dark pigmentation is more concentrated and intense, taking the shape of a nearly round blotch; all fins hyaline with scattered black melanophores especially on the dorsal and caudal fin.

Detailed meristic and morphometric data are presented in tables 1 and 2, respectively.

Distribution

This species is known only from the type locality (Fig. 9).

Oligosarcus schindleri sp. n. (Fig. 2)

Holotype: ZSM 26095 (male, 67.0 mm S.L.), collected at San Francisco de Chipiriri in a small tributary of the Rio Chapare (Rio Madeira basin), about 100 km east of Cochabamba, Bolivia, October 1953 by Otto Schindler and Walter Forster.

Paratypes: ZSM 26094 (1 female, 70.0 mm) and USNM 228088 (1 female, 82.0 mm), collected in Laguna Alalay, Cochabamba, Bolivia, altitude of 1,200-1,500 meters, 13 October 1953 by Pater Luiz, Otto Schindler and Walter Forster; MHNG 2098.10-11 (1 male, 64.0 mm and 1 female, 68.0 mm), collected at same locality as holotype, October 1953 by Otto Schindler and Walter Forster; MZUSP 25719 (1 female, 73.0 mm) collected in Laguna Sarco, Cochabamba, Bolivia, altitude of about 1,200-1,500 m, 12 October 1953 by Otto Schindler and Walter Forster; MZUSP 25720 (1 female, 62.0 mm), collected in Laguna Alalay, Cochabamba, Bolivia, 17 November 1953 by Otto Schindler and Walter Forster.

Diagnosis

This species is readily distinguished from any other species of *Oligosarcus* by its short anal fin (17-19 branched anal rays versus 20 or more in all other species). It is similar to *Oligosarcus bolivianus* in having the snout and the predorsal body profile convex and the lower jaw as long as upper when the mouth is closed, but differs markedly from this species in number of gill rakers, scales above and below the lateral line, maxillary teeth (table 1) as well as in snout length, interorbital distance and caudal peduncle depth (table 3).

Description

Body relatively small (S.L. 62.0-82.0 mm), compressed. Dorsal outline of body slightly more curved than ventral, the predorsal profile strongly convex, only slightly concave at nape. Snout convex, not acute, much shorter than orbital diameter; lower jaw as long as upper when mouth is fully closed, so that the first large conical teeth on the premaxillary is not entirely outside the mouth. Maxillary relatively short, its posterior tip reaching only to a vertical line drawn through the anterior border of the pupil, wider posteriorly; 14-17 weakly tricuspid teeth on maxillary. Premaxillary with a caniniform tooth in front, followed by another caniniform tooth, only scarcely smaller than the first, 3 small conical teeth slightly external to the second caniniform tooth,

TABLE 1.
 Meristic data for the new species of *Oligosarcus*. Data of *O. bolivianus* introduced for comparisons.

| | <i>O. planaltinae</i> | | | | <i>O. schindleri</i> | | | | <i>O. bolivianus</i> | | | |
|------------------------|-----------------------|-------|------|------|----------------------|-------|------|------|----------------------|-------|------|------|
| | N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S |
| Anal fin rays | 4 | 24-26 | 25.0 | 0.40 | 7 | 17-19 | 17.7 | 0.36 | 8 | 21-24 | 22.3 | 0.37 |
| Pectoral fin rays | 4 | 13-14 | 13.2 | 0.25 | 7 | 13-15 | 14.1 | 0.34 | 8 | 14 | 14.0 | — |
| Gill rakers | 4 | 13-14 | 13.5 | 0.28 | 7 | 12-14 | 13.1 | 0.26 | 8 | 14-15 | 14.6 | 0.18 |
| Lat. line scales | 4 | 38-40 | 39.2 | 0.47 | 6 | 48-54 | 49.8 | 0.91 | 10 | 49-55 | 53.3 | 0.57 |
| Scales above lat. line | 4 | 8 | 8.0 | — | 7 | 7 | 7.0 | — | 10 | 10-11 | 10.5 | 0.16 |
| Scales below lat. line | 4 | 7 | 7.0 | — | 7 | 7-9 | 7.8 | 0.26 | 10 | 9-10 | 9.3 | 0.15 |
| Maxillary teeth | 4 | 24-27 | 25.7 | 0.63 | 7 | 14-17 | 15.8 | 0.40 | 8 | 17-24 | 20.5 | 0.78 |
| Post. dentary teeth | 4 | 13-16 | 14.5 | 0.64 | 7 | 10-15 | 11.5 | 0.72 | 9 | 12-17 | 14.1 | 0.56 |
| Ectopterygoid teeth | 4 | 10-18 | 13.7 | 1.75 | 7 | 10-14 | 12.1 | 0.59 | 8 | 8-13 | 10.7 | 0.59 |
| Vertebrae | 1 | 38 | — | — | 3 | 38 | 38.0 | — | — | — | — | — |

TABLE 1. (continued)
 Student's t-test applied to evaluate differences between *O. paranensis* and *O. longirostris*.
 Data of *O. macrolepis* introduced for comparisons.

| | <i>O. macrolepis</i> | | | | <i>O. paranensis</i> | | | | <i>O. longirostris</i> | | | | | |
|---------------------|----------------------|-------|------|------|----------------------|-------|------|------|------------------------|-------|------|------|------|-------|
| | N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S | t | P (t) |
| Anal fin rays | 5 | 25-27 | 26.6 | 0.40 | 166 | 20-27 | 22.7 | 0.09 | 12 | 22-26 | 24.0 | 0.34 | 3.74 | XXX |
| Pect. fin rays | 5 | 14 | 14.0 | — | 167 | 12-16 | 14.1 | 0.10 | 12 | 13-15 | 13.6 | 0.19 | 1.32 | NS |
| Gill rakers | 5 | 13-15 | 14.4 | 0.40 | 167 | 12-15 | 14.1 | 0.07 | 12 | 12-14 | 13.1 | 0.24 | 3.71 | XXX |
| Lat. line scales | 5 | 44-48 | 46.2 | 0.66 | 145 | 47-54 | 50.1 | 0.12 | 12 | 47-51 | 48.8 | 0.36 | 3.01 | XXX |
| SCS above lat. line | 5 | 8 | 8.0 | — | 145 | 9-10 | 9.7 | 0.03 | 12 | 9-10 | 9.3 | 0.14 | 3.59 | XXX |
| SCS below lat. line | 5 | 6-7 | 6.4 | 0.24 | 141 | 6-8 | 7.1 | 0.03 | 12 | 7-8 | 7.4 | 0.14 | 2.71 | XXX |
| Maxillary teeth | 5 | 19-28 | 23.6 | 1.50 | 166 | 18-35 | 25.3 | 0.26 | 12 | 24-32 | 27.0 | 0.66 | 1.72 | NS |
| Post. dent. teeth | 5 | 13-20 | 15.8 | 1.24 | 164 | 11-21 | 16.0 | 0.19 | 12 | 14-19 | 16.6 | 0.46 | 0.84 | NS |
| Ectopt. teeth | 5 | 12-14 | 13.6 | 0.40 | 167 | 7-22 | 12.5 | 0.21 | 12 | 10-14 | 11.6 | 0.35 | 1.13 | NS |
| Vertebrae | — | — | — | — | 5 | 38 | 38 | — | 2 | 39 | 39 | — | — | — |

NS = not significant; XX = significant at 0.05 level; XXX = significant at 0.01 level.

TABLE 2.

Morphometric data for the new species of *Oligosarcus*. Fifth, sixth and seventh measurements are in percentage of the head length. Data of *O. bolivianus* introduced for comparisons.

| | <i>O. planaltinae</i> | | | | <i>O. schindleri</i> | | | | <i>O. bolivianus</i> | | | |
|----------------------|-----------------------|-----------|------|------|----------------------|-----------|------|------|----------------------|------------|-------|------|
| | N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S |
| Standard length (mm) | 4 | 52.5-99.0 | 69.1 | 10.8 | 7 | 62.0-82.0 | 70.7 | 2.85 | 9 | 82.0-147.0 | 100.1 | 7.6 |
| Trunk length | 4 | 67.6-69.7 | 68.1 | 0.52 | 7 | 68.5-72.1 | 70.4 | 0.46 | 8 | 68.1-71.4 | 69.9 | 0.38 |
| Head length | 4 | 30.3-32.4 | 31.6 | 0.49 | 7 | 27.8-31.5 | 29.5 | 0.46 | 8 | 28.5-31.8 | 30.0 | 0.38 |
| Body depth | 4 | 31.5-33.8 | 32.5 | 0.48 | 7 | 28.1-32.8 | 30.2 | 0.72 | 9 | 29.2-33.6 | 31.5 | 0.42 |
| Snout length | 4 | 23.9-26.4 | 25.4 | 0.62 | 7 | 18.0-20.0 | 18.7 | 0.28 | 7 | 24.6-28.5 | 27.2 | 0.58 |
| Orbital diameter | 4 | 30.4-35.3 | 33.1 | 1.25 | 7 | 27.2-32.4 | 30.1 | 0.72 | 8 | 26.9-34.7 | 31.1 | 1.06 |
| Interorb. distance | 4 | 21.7-23.5 | 23.0 | 0.43 | 7 | 26.3-30.4 | 27.5 | 0.53 | 7 | 28.2-33.9 | 31.2 | 0.70 |
| Pect. fin length | 4 | 18.5-20.9 | 19.9 | 0.52 | 6 | 20.8-23.4 | 23.1 | 0.41 | 4 | 20.3-23.2 | 21.1 | 0.14 |
| Pelvic fin length | 4 | 15.7-18.3 | 16.9 | 0.53 | 7 | 14.5-19.5 | 16.9 | 0.73 | 5 | 14.9-18.6 | 17.2 | 0.67 |
| Predorsal distance | 4 | 56.5-57.1 | 56.8 | 0.16 | 7 | 54.4-58.9 | 55.6 | 0.58 | 8 | 49.2-60.4 | 57.0 | 1.26 |
| Prealanal distance | 4 | 62.6-66.6 | 64.9 | 0.86 | 7 | 68.5-71.9 | 69.8 | 0.61 | 6 | 68.0-87.0 | 72.7 | 2.90 |
| Caudal ped. depth | 4 | 10.4-11.2 | 10.9 | 0.17 | 7 | 9.6-11.9 | 10.7 | 0.31 | 9 | 11.6-12.8 | 12.2 | 0.14 |

TABLE 2. (continued)
 Student's t-test applied to evaluate the differences between *O. paranensis* and *O. longirostris*.
O. macrolepis introduced for comparisons. Sequence of measurements as in former table.

| <i>O. macrolepis</i> | | | | <i>O. paranensis</i> | | | | <i>O. longirostris</i> | | | | | |
|----------------------|-----------|------|------|----------------------|------------|-------|------|------------------------|-------------|-------|------|------|-------|
| N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S | t | P (t) |
| 5 | 50.0-70.0 | 61.0 | — | 167 | 37.0-205.0 | 124.0 | — | 12 | 110.0-200.0 | 169.9 | — | — | — |
| 5 | 67.7-68.8 | 68.1 | 0.19 | 164 | 66.2- 72.1 | 69.1 | 0.09 | 12 | 66.0- 68.9 | 67.1 | 67.1 | 5.90 | XXXX |
| 5 | 31.1-32.2 | 31.8 | 0.19 | 165 | 28.1- 33.7 | 30.8 | 0.25 | 12 | 31.0- 34.0 | 32.8 | 32.8 | 2.14 | XX |
| 5 | 30.0-31.1 | 30.4 | 0.21 | 158 | 26.7- 33.4 | 29.3 | 0.21 | 12 | 26.9- 29.7 | 28.4 | 28.4 | 1.17 | NS |
| 5 | 25.0-33.3 | 29.5 | 1.33 | 165 | 22.2- 28.8 | 26.2 | 0.11 | 12 | 26.3- 30.7 | 28.9 | 28.9 | 8.82 | XXXX |
| 5 | 33.3-38.2 | 36.8 | 0.88 | 165 | 23.4- 37.5 | 28.4 | 0.21 | 12 | 21.5- 27.7 | 24.5 | 24.5 | 4.90 | XXXX |
| 5 | 18.7-26.4 | 23.5 | 1.35 | 165 | 17.8- 25.9 | 21.9 | 0.11 | 12 | 20.8- 22.7 | 22.0 | 22.0 | 0.24 | NS |
| 5 | 22.2-26.0 | 23.9 | 0.67 | 166 | 17.0- 23.8 | 19.8 | 0.08 | 12 | 17.9- 21.8 | 18.9 | 18.9 | 2.91 | XXXX |
| 5 | 16.2-18.0 | 17.2 | 0.31 | 162 | 13.6- 19.0 | 16.2 | 0.08 | 11 | 12.8- 18.1 | 14.8 | 14.8 | 4.28 | XXXX |
| 5 | 56.6-60.0 | 58.1 | 0.61 | 167 | 52.0- 59.7 | 56.0 | 0.12 | 12 | 54.4- 57.7 | 56.1 | 56.1 | 0.22 | NS |
| 5 | 63.5-66.2 | 64.4 | 0.46 | 166 | 64.1- 74.5 | 68.2 | 0.18 | 12 | 65.4- 73.0 | 70.2 | 70.2 | 2.90 | XXXX |
| 5 | 8.0-12.9 | 11.3 | 0.88 | 167 | 8.1-11.5 | 10.1 | 0.05 | 12 | 8.5- 10.7 | 9.5 | 9.5 | 3.14 | XXXX |

S = standard deviation; NS = not significant; XX = significant at 0.05 level; XXX = significant at 0.01 level.

then a third caniniform about the same size as the second one and finally a small conical tooth. Dentary with a large caniniform tooth in front, followed by 3 widely spaced conical teeth, the size of which increases gradually from the first to the third, the last being only slightly smaller than the anteriormost caniniform tooth; a row of 10-15 inconspicuously tricuspid teeth follows the 3 large conical teeth. Ectopterygoid with 10-14 nearly conical teeth, some of which have vestigial cusps. Gill rakers 12-14 on lower limb of first gill arch.

Lateral line complete, slightly decurved anteriorly, with 48-54 scales; 7 scale rows from dorsal fin origin to lateral line, 7-9 from anal fin origin to lateral line; single row of scales along anal fin base, extending to about tenth branched ray.



FIG. 2.

Oligosarcus schindleri, sp. n., MZUSP 25720, SL 62.0 mm, paratype, female.

Dorsal fin ii,9, its origin nearer to caudal fin base than to tip of snout. Anal fin with iv,17-19 rays, its origin slightly behind a vertical line drawn ventrally from posterior end of dorsal fin base; distal part of first nine branched anal fin rays with spines in males; margin of anal fin slightly concave. Pelvic fins with i,7 rays, the branched rays with spines in males; longest pelvic ray reaching beyond anus but not to origin of anal fin. Pectoral fin rays i,13-15, tip of longest ray not reaching insertion of pelvic fin. Principal rays of caudal fin i,17,i.

Color in alcohol light tan, a little darker above; a small dark humeral spot, vertically elongate; a dark silvery lateral stripe, somewhat darker on the caudal peduncle, extending as a dark line onto the middle caudal rays; all fins hyaline with scattered dark melanophores. Most of the specimens have lost most of their original coloration.

The meristic data are presented in table 1 and the morphometrics in table 2.

Distribution

O. schindleri is known from a tributary of Rio Chapare (Rio Madeira basin) and small ponds (lagunas) near Cochabamba, Bolivia (Fig. 9).

This species is named after the late Dr. Otto Schindler, formerly curator of the Ichthyology Department, Zoologische Staatssammlung, München, Germany.

***Oligosarcus paranensis* sp. n. (Fig. 3)**

Holotype: MZUSP 25721 (female, 144.0 mm S.L.), collected in Represa de Salesópolis (Tietê river system), State of São Paulo, Brazil, 23 April 1975, by a team of the Instituto de Pesca da Secretaria da Agricultura do Estado de São Paulo.

Paratypes: MZUSP 25722-85 (64, 92.0-205.0 mm); MHNG 2098.2-7 (6, 123.0-135.0 mm); USNM 228082 (5, 98.0-138.0 mm) collected at same locality as holotype by the same team in 1975; MZUSP 25786 (1 female, 160.0 mm) collected at same locality as holotype by the same team in 1974. MZUSP 25787-803 (17, 104.0-197.0 mm), collected at same locality as holotype by the same team in 1976. MZUSP 21796-97, 21799-803, 21805, 21808-811 (12, 94.0-147.0 mm); USNM 228081 (2, 108.0 and 124.0 mm) and MNHN 1982-1111-12 (2, 103.0 and 106.0 mm), collected in Arroio Guaçu (Paraná river system), State of Paraná, Brazil, July 1980 by a team of CETESB — Companhia de Tecnologia de Saneamento Ambiental, São Paulo. MZUSP 21774-81 (8, 120.0-148.0 mm), collected in Rio Ocoí (Paraná river system), State of Paraná, Brazil, October 1980 by the same team of CETESB. MZUSP 21747, 21768-771 (5, 108.0-205.0 mm), collected in Rio São Francisco Falso (Paraná river system), State of Paraná, Brazil, August 1980 by the same team of CETESB. MZUSP 21085 (1 female, 122.0 mm), collected in the mouth of Rio São Francisco Verdadeiro (Paraná river system), State of Paraná, Brazil, August 1980 by the same team of CETESB. MZUSP 36213, 4713-14 (3, 37.0-73.0 mm), collected in Córrego das Camélias (Tietê river system), Ribeirão Pires, State of São Paulo, Brazil, by João D'Amico in 1940. MZUSP 1450 (1 male, 115.0 mm), collected in Rio Tietê, State of São Paulo, March 1905. MZUSP 4734 (1 female, 128.0 mm), collected in Rio Tietê, Fazenda Pau D'Alho, Itu, State of São Paulo, Brazil, December 1962 by Ubirajara R. Martins de Souza. MZUSP 25804 (1 male, 73.0 mm), collected in Represa de Taiacupeba (Tietê river system), State of São Paulo, Brazil, 20 May 1979 by Ricardo M. C. Castro. MZUSP 25805 (1 male, 103.0 mm), collected in Represa de Atibainha (Tietê river system), Município de Nazaré Paulista, State of São Paulo, Brazil, 5-6 December 1979 by Ricardo M. C. Castro. MZUSP 25806-832 (27, 85.0-108.0 mm), collected in Rio Cachoeira, tributary of Rio Piracicaba (Tietê river system), Município de Piracaia, State of São Paulo, Brazil, 5 December 1979 by Ricardo M. C. Castro. MZUSP 25833-40 (8, 59.0-90.0 mm), collected in Rio Paraitinga, a tributary of Rio Tietê at km 3 of the road from Salesópolis to Caraguatatuba, State of São Paulo, Brazil, 3 December 1979 by the Expedition MZUSP-USNM. MZUSP 4685 (1 male, 146.0 mm), collected in Rio das Antas, tributary of Rio Uruguay, State of Santa Catarina, Brazil, January 1953 by E. Dente and Camargo.

The following paratype material of *Oligosarcus paranensis* was examined but not used for meristics and morphometrics of the description: MZUSP 21812 (1, 100.0 mm) collected in Arroio Guaçu (Paraná river system), State of Paraná, Brazil, August 1980 by the team of CETESB mentioned above. MZUSP 21743-44 (2, 115.0 and 135.0 mm) collected in the mouth of Rio São Francisco Verdadeiro (Paraná river system), State of Paraná, Brazil, August 1980 by the same team of CETESB. MZUSP 21782-83 (2, 113.0 and 118.0 mm), collected in Rio Ocoí (Paraná river system), State of Paraná, Brazil, October 1980 by the same team of CETESB.

Diagnosis

Among the species of *Oligosarcus*, *O. paranensis* is most similar to *O. macrolepis* (Steindachner) in body shape and in having relatively large scales on the body. It can be distinguished from this species by the higher number of anal-fin rays, lower number of scales in and above the lateral line (table 1) and in having a shorter snout and a smaller

eye (table 2). *O. paranensis* can be differentiated from *O. planaltinae* by its high number of scales in the lateral line (47-54 versus 38-40), and from *O. schindleri* by its high number of anal-fin rays (20-27 versus 17-19); it differs from *O. jenynsii* (Günther), *O. hepsetus* (Cuvier) and *O. robustus* Menezes in having fewer scales above the lateral line (9-10 versus 10-19), below the lateral line (6-8 versus 8-15) and in the lateral line (47-54 versus 51-83); it is distinguished from *O. bolivianus* (Fowler), *O. meadi* Menezes and *O. argenteus* Günther in having the snout acute and longer than the orbital diameter in adult specimens (versus snout blunt and smaller than or equal to orbital diameter in adult specimens); also it has fewer scales below the lateral line than *O. bolivianus* (6-8 versus 9-10), and more scales in the lateral line than either *O. argenteus* or *O. meadi* (47-54 versus 43-49). It differs from *O. longirostris*, sp. n., in having a shorter snout (table 3) and fewer vertebrae (table 2).



FIG. 3.

Oligosarcus paranensis, sp. n., MHNG 2098.3, SL 133.0 mm, paratype, female.

Description

Body moderately large (S.L. 37.0-205.0 mm), compressed. Dorsal and ventral body profiles about equally curved; predorsal profile convex from occiput to origin of dorsal fin, straight with a slight depression at the nape to concave (in very large specimens) from tip of snout to occiput. Snout pointed, slightly shorter than orbital diameter in specimens lesser than 100 mm S.L.; lower jaw included in upper jaw, the anteriormost premaxillary caniniform teeth remaining outside the mouth but in contact with lower jaw when mouth is closed. Maxillary curved, slightly wider towards its posterior end, bearing 18-35 weakly tricuspid teeth; maxillary teeth increasing in number with increasing size; posterior tip of maxillary reaching to a vertical line passing through the posterior border of the orbit. Premaxillary with a canine tooth anteriorly, followed by 3-6 small conical teeth of which one, in the median part of the row, is slightly larger and internal to the others; this row followed by 1 canine similar to the anterior one and 1 small conical tooth. Dentary with 1 well-developed canine anteriorly followed by 3 (rarely 4) large, widely spaced, conical teeth gradually increasing in size, the last being almost a canine, and then a row of 11-21 nearly tricuspid teeth; small specimens have fewer teeth than larger specimens on the posterior part of dentary. Ectopterygoid with a row of nearly tricuspid teeth, highly variable in number (7-22). Gill rakers 12-15 on lower limb of first gill arch.

Lateral line complete, a little decurved anteriorly, with 47-54 scales; 9-10 scale rows above, 6-8 below the lateral line. Base of anal fin covered anteriorly by 2 rows of scales to the sixth or seventh branched ray, followed by only one row to about the eleventh ray.

Dorsal fin rays ii,9, its origin closer to caudal base than to tip of snout. Anal fin with iv,20-27 rays, its origin slightly behind a vertical line passing through end of dorsal-fin base; spines present on anal fin of males; in one specimen (135.0 mm S.L.), the spines are present on the last unbranched ray and the following eleven branched rays, and are concentrated on the posterior part of each ray; the number of spines per ray varies from 18 to 20 on the first to about 3 or 4 on the eleventh branched ray; margin of anal fin slightly concave. Caudal fin lobes equally developed or lower lobe slightly longer in some specimens; number of principal caudal rays i,17,i. Pelvic fins with i,7 rays, tip of the longest ray reaching beyond anus but not reaching anal-fin origin. Pectoral-fin rays i,12-16, tip of longest ray not reaching origin of pelvic fins.

Color in alcohol dark brown on top of head and body, shading to light brown on the sides and to pale below; snout and lower part of opercles darkly pigmented; lower jaw and cheek with scattered black chromatophores; a dark vertically elongate spot at the humeral region, tapering below; a progressively widening dark silvery lateral stripe, extending from behind upper part of the opercle to midlateral surface of caudal peduncle; stripe continuous with a longitudinally elongate spot on caudal peduncle, which extends onto middle caudal rays; all fins hyaline with scattered black melanophores, especially on the dorsal, caudal and anal fins.

The meristics are presented in table 1, the morphometrics in table 2.

Sexual dimorphism

In this species the females grow larger than the males. A sample of 93 specimens collected in Reprêsa de Salesópolis, State of São Paulo, during 1975 and 1976 (collections made at regular periods of time throughout the year) included sizes from 90 to 210 mm S.L. The 43 males present in this sample ranged from 90 to 160 mm with slightly more than 50% being between 120 and 140 mm. The 50 females represented in the sample ranged from 90 to 210 mm, with 60% being between 150 and 210 mm.

Distribution

O. paranensis is a widespread species (Fig. 9), collected so far only in tributaries of the Paraná basin. In the State of São Paulo (upper Paraná basin), all the samples are from tributaries of the Tietê river or from the upper part of the Tietê itself. The only specimen from the State of Santa Catarina was collected in Rio das Antas, a tributary of the Uruguay river, a major component of the Paraná (La Plata) basin. In the lower Paraná basin all the samples are from tributaries of the Paraná River in the State of Paraná, and in spite of numerous collecting activities in the Paraná River itself by the CETESB team during 1980, not a single specimen was caught in the large river. It seems then that this species is mostly confined to headwaters and tributaries of the large rivers forming the Paraná basin. Further collecting may reveal its presence in many other tributaries of this large basin.

Geographic variation

The samples from the three main geographical areas (Tietê river basin, lower Paraná basin and Rio das Antas) were compared through meristic and linear regression analysis but no significant differences were found.

TABLE 3.

Linear regression analysis of morphometric characters for *O. paranensis* and *O. longirostris*. Third measurements (head length) after trunk length, next three measurements after head length and the remaining measurements after standard length.

| | <i>Oligosarcus paranensis</i> | | | | | <i>Oligosarcus longirostris</i> | | | | | | | | | | |
|-------------|-------------------------------|------------|-------|-------|------|---------------------------------|----|-------------|-------|-------|------|----------------|-------|-------|-------|-------|
| | N | Range | Mean | a | b | r ² | N | Range | Mean | a | b | r ² | t (a) | P (t) | t (b) | P (t) |
| Std. L. | 167 | 37.0-205.0 | 123.8 | — | — | — | 12 | 110.0-200.0 | 169.9 | — | — | — | — | — | — | — |
| Trk. L. | 164 | 25.0-139.0 | 85.3 | 2.77 | 0.66 | 0.99 | 12 | 74.0-134.0 | 114.0 | 2.67 | 0.65 | 0.99 | 0.100 | NS | 0.71 | NS |
| Hd. L. | 165 | 12.0-66.0 | 38.3 | -3.45 | 0.48 | 0.96 | 12 | 36.0-68.0 | 55.9 | -3.46 | 0.52 | 0.97 | 0.036 | NS | 1.25 | NS |
| Snt. L. | 165 | 3.0-18.0 | 9.8 | -1.17 | 0.28 | 0.97 | 12 | 9.5-20.0 | 16.3 | -1.91 | 0.32 | 0.98 | 0.100 | NS | 17.50 | XXX |
| Orb. diam. | 165 | 4.5-16.0 | 10.6 | 3.33 | 0.19 | 0.95 | 12 | 10.0-16.0 | 13.5 | 4.12 | 0.17 | 0.88 | 0.020 | NS | 1.57 | NS |
| IO. dist. | 165 | 3.0-16.0 | 8.4 | -0.70 | 0.23 | 0.91 | 12 | 7.5-15.0 | 12.3 | -0.22 | 0.22 | 0.99 | 0.030 | NS | 0.45 | NS |
| Body D. | 158 | 11.0-62.0 | 36.1 | -1.50 | 0.30 | 0.97 | 12 | 32.0-58.0 | 49.1 | -5.20 | 0.32 | 0.92 | 0.018 | NS | 1.19 | NS |
| Pec. F.L. | 166 | 14.0-38.0 | 24.5 | 3.57 | 0.16 | 0.96 | 12 | 24.0-37.0 | 31.9 | 6.53 | 0.15 | 0.96 | 0.025 | NS | 0.47 | NS |
| Pelv. F.L. | 162 | 11.0-31.0 | 20.1 | 3.93 | 0.13 | 0.95 | 12 | 20.0-29.0 | 25.2 | 9.74 | 0.09 | 0.88 | 0.050 | NS | 0.32 | NS |
| Pred. dist. | 167 | 21.0-118.0 | 69.5 | -1.39 | 0.57 | 0.99 | 12 | 63.0-113.0 | 94.9 | -0.23 | 0.56 | 0.98 | 0.050 | NS | 0.54 | NS |
| Prea. dist. | 166 | 25.0-147.0 | 85.0 | -6.04 | 0.73 | 0.98 | 12 | 72.0-146.0 | 119.4 | -6.86 | 0.74 | 0.98 | 0.060 | NS | 0.04 | NS |
| Caud. P.D. | 167 | 4.0-20.0 | 12.5 | 1.20 | 0.09 | 0.94 | 12 | 10.0-19.0 | 16.1 | 0.92 | 0.09 | 0.91 | 0.003 | NS | 0 | NS |

a = regression constant (elevation)

b = regression coefficient (slope)

r² = coefficient of determination

NS = not significant

XX = significant at 0.05 level

XXX = significant at 0.01 level.

Oligosarcus longirostris sp. n. (Fig. 4)

Holotype: MZUSP 25841 (female, 190.0 mm S.L.), collected in Rio Iguaçú (Paraná basin) at Porto Lupion, State of Paraná, Brazil, May 1979 by a team of SUREHMA — Superintendência de Recursos Hídricos do Meio Ambiente do Estado do Paraná.

Paratypes: MZUSP 25842-48 (6 females, 180.0-200.0 mm; 1 male, 115.0 mm); MHNG 2098.8-9 (2 females, 110.0-147.0 mm); USNM 228080 (2 females, 130.0-145.0 mm), all taken with the holotype.

Diagnosis

Among the species of *Oligosarcus*, *O. longirostris* could possibly be confused only with *O. paranensis*, to which it is very similar in body shape and most meristics and morphometrics. However, it can be readily distinguished from *O. paranensis* in having



FIG. 4.

Oligosarcus longirostris, sp. n., MHNG 2098.8, SL 147.0 mm, paratype, female.

a much longer snout (table 3). Other differences detected in meristics (table 1) and morphometrics (table 2) might not really be significant due to the large difference in sample size ($N = 12$ for *O. longirostris* and $N = 141$ to 167 for *O. paranensis*), which makes the use of Student's *t* test inadequate. Indeed, with respect to morphometrics, linear regression analysis (table 3) shows that the only significant difference is in the length of the snout. In 2 specimens of *O. longirostris* the total number of vertebrae is 39 and in 5 specimens of *O. paranensis* 38.

Description

Body large (S.L. 110.0-200.0 mm), compressed. Ventral body profile slightly more curved than dorsal; predorsal profile convex from occiput to dorsal-fin origin, concave at the nape and straight from nape to tip of snout. Snout pointed and long, equal to orbital diameter in specimens slightly longer than 100 mm S.L., longer to considerably longer than orbital diameter in specimens with body length longer than 150 mm S.L. Lower jaw shorter than upper, its tip behind the two anterior canines at the tip of upper jaw when mouth is closed. Maxillary curved, slightly wider at its posterior end, with

24-32 nearly conical teeth (lateral cusps vestigial). Composition, size and shape of teeth on the premaxillary and dentary as in *O. paranensis*. Four to five small conical teeth between the anterior and posterior canines on the premaxillary, one located near the middle of the row slightly larger than the others. Posterior part of dentary with 14-19 weakly tricuspid to nearly conical teeth. Gill rakers 12-14 on lower limb of first gill arch.

Lateral line complete, decurved anteriorly, with 47-51 scales. Nine to ten scale rows above, 7-8 below the lateral line. Base of anal fin covered anteriorly by 1 row of scales which extends to about the tenth branched ray.

Dorsal-fin rays ii,9; origin of dorsal fin nearer to caudal fin than to tip of snout. Anal with iv,22-26 rays, its origin behind a vertical line passing through end of dorsal-fin base; spines present on last unbranched and the following 9 branched anal-fin rays of one male (155.0 mm S.L.); there are as many as 20 spines on first ray and only 8 on ninth branched ray; margin of anal fin concave. Lower and upper caudal-fin lobes about equally developed; number of principal caudal rays i,17,i. Pelvic fins with i,7 rays, tip of longest ray reaching slightly beyond anus but not to origin of anal fin. Pectoral fin rays i,13-15, tip of longest ray not reaching origin of pelvic fin.

Color in alcohol identical to that of *O. paranensis*.

The meristic data are presented in table 1, the morphometrics in table 2 and the linear regression data in table 3.

Distribution

O. longirostris is restricted to the Iguaçú river above the waterfalls which separate the upper from the lower part of this tributary of the Paraná river (Fig. 9).

Acestrorhynchus isalineae sp. n. (Figs. 5, 6)

Holotype: MZUSP 25849 (male, 89.0 mm S.L.), collected in a tributary of Rio dos Marmelos (Rio Madeira basin), 110 km east of Humaíta along rodovia Transamazônica, State of Amazonas, Brazil, 23 August 1976 by H. R. Axelrod, J. Géry, H. Bleher, G. van den Bossche and A. Schwartz.

Paratypes: MZUSP 25850-60 (11, 58.0-101.0 mm); USNM 228087 (2, 79.0 and 83.0 mm); MHNG 2098.14-17 (4, 79.0-91.0 mm); MNHN 1982-1114 (1, 52.0 mm), all taken with the holotype.

Diagnosis

This species has the same general color pattern as *A. nasutus* Eigenmann, consisting of two longitudinal dark stripes against a paler background; the superior stripe runs from the tip of the snout to the caudal base and the inferior one from about the end of the maxillary to the lower part of the caudal peduncle, being rather diffuse anteriorly. This peculiar color pattern is not found in any of the previously known species of the genus *Acestrorhynchus*. It differs from *A. nasutus* in having more scales on the lateral line (84-92 versus 78-82), and more scales above (14-15 versus 13-14) and below (9-10 versus 8-9) the lateral line. Also it has on the average fewer anal-fin rays, more pectoral-fin rays, more maxillary teeth, more teeth on the posterior part of the dentary (table 4), and the head and the snout are shorter, the trunk longer, the eye smaller and the inter-orbital narrower (table 6). Like *A. nasutus* it is a small species.

Description

Body small (S.L. 52.0-101.0 mm), compressed and very elongate. Predorsal body profile slightly convex, almost straight from occiput to tip of snout. Snout pointed, very

elongate, about twice as long as orbital diameter; lower jaw much shorter than upper, the two anterior caniniform teeth on the upper jaw remaining outside the mouth. Maxillary with the posterior toothed edge convex, ending in an acute angle, anteriorly with 1 canine tooth followed by 2 or 3 conical teeth, 1 canine, and 1 conical tooth about as long as the preceding conical teeth between the two canines; remaining border of maxillary bearing a row of 26-36 closely set conical teeth, smaller than the anterior conical



FIG. 5-6.

Acestrorhynchus isalineae, sp. n., MHNG 2098.14, SL 91.00 mm, paratype, male (fig. 5);
Acestrorhynchus isalineae, sp. n., MZUSP 25853, SL 88.0 mm, paratype, female (fig. 6).

ones; small specimens with fewer posterior maxillary teeth than large specimens. Pre-maxillary with 3 widely spaced canine teeth, the second smaller than the first and the third which are about equal in size; 2-3 small conical teeth next to the third canine. Upper part of each premaxillary with two foramina to receive the anterior two canine teeth on the dentary. Dentary with 1 canine anteriorly, followed by another canine larger than the first and 4 widely spaced conical teeth, the first smaller than the other three, which are about as large as the anteriormost canine; a posterior row of 15-22 small closely set conical teeth follows these teeth; 1 or 2 small conical teeth posterior to the second large canine are slightly displaced internally, and seem to represent a rudimentary inner row. Ectopterygoid with a long row of very small closely set conical teeth inclined posteriorly, the number of which is very difficult to determine precisely. Mesopterygoid with a short row of about 10 very small conical teeth. Gill rakers spiny, 12-15 on lower

limb of first gill arch; free upper edge of each gill raker with 5 developed spines and some very small ones below, extending onto the laminar bony surface of the gill raker.

Scales relatively small, 84-92 in the lateral line which is a little decurved anteriorly; 14-15 scale rows from dorsal-fin origin to lateral line, 9-10 from lateral line to anal-fin origin; a short row of scales along anal-fin base, extending from its origin to about the tenth branched ray.

Dorsal fin with ii,9 rays, its origin considerably behind the midlength of body; distal edge of dorsal fin slightly concave. Anal fin falcate anteriorly, the tips of first branched rays reaching beyond the middle of anal-fin base when the fin is adpressed; anal-fin origin on a vertical line that passes slightly behind the middle of dorsal-fin base; anal-fin rays iv,22-24, devoid of hooks or spines in male specimens. Pelvic fins with i,7 rays, tip of longest ray not reaching anterior border of the anus. Pectoral fins slightly longer than pelvic fins, with i,12-15 rays; tip of longest pectoral-fin ray far from pelvic-fin origin. Caudal lobes equally developed; principal caudal-fin rays i,17,i.

Color in alcohol dark brown on top of the head and upper third of the body; a dark midlateral stripe running from tip of snout to caudal base, slightly enlarged on midlateral surface of caudal peduncle, and posteriorly in contact with a nearly round black spot on base of middle caudal rays; a second dark stripe narrower than the one above it, running from about the posterior end of maxillary to the lower surface of caudal peduncle, somewhat indistinct anteriorly, becoming enlarged above anal-fin base; the dorsal surface and these two stripes contrast sharply with the paler background color of the lateral and inferior parts of the body. All fins hyaline with scattered black chromatophores which are more evident on the dorsal, caudal and anal fins. Two pale areas devoid of pigment, one above and one below the black caudal spot. In freshly collected specimens these and the tip of the dorsal fin were reported to be red.

The meristic data are presented in table 4, the morphometrics in table 6.

Sexual dimorphism

Comparing figures 5 and 6 it can be seen that in the male (Fig. 5) the midlateral dark stripe is wider and more intense than in the female. The inferior dark stripe in the male is also more conspicuous and darker than in the female. Such a pattern-dimorphism is very unusual in acestrorhynchin fishes.

Distribution

A. isalineae is known only from the type-locality (Fig. 9), but it may occur in other tributaries of the Rio Marmelos and the Madeira.

This species is named after the late Mrs. Isaline Drecq, wife of Mr. Guy van den Bossche, participant in the expedition which found the species.

***Acestrorhynchus maculipinna* sp. n. (Fig. 7)**

Holotype: MZUSP 25861 (79.0 mm S.L.), collected in Rio Preto da Eva, between Manaus and Itacoatiara, State of Amazonas, Brazil, 8 November 1978 by Claude Gosset.

Paratypes: MZUSP 25862 (1, 66.0 mm); MHNG 2098.13 (1, 63.0 mm); MNHN 1982-1115 (1, 62.0 mm), all taken with the holotype.

Diagnosis

A. maculipinna has the same two longitudinal dark stripes on the body that characterize the color pattern of both *A. nasutus* and *A. isalineae* and set these three species apart from the remaining species of the genus. It differs from the latter two species and

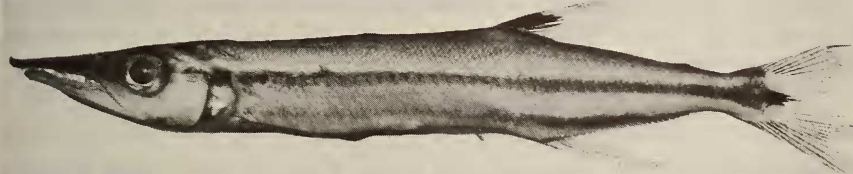
TABLE 4.
 Meristic data for the new species of *Acestrorhynchus*. *A. nasutus* introduced for comparisons.

| | <i>A. maculipinna</i> | | | | <i>A. nasutus</i> | | | | <i>A. isaltineae</i> | | | |
|------------------------|-----------------------|-------|------|------|-------------------|-------|------|------|----------------------|-------|------|------|
| | N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S |
| Anal fin rays | 4 | 24-26 | 25.0 | 0.40 | 10 | 23-27 | 24.9 | 0.37 | 18 | 22-24 | 23.2 | 0.17 |
| Pectoral fin rays | 4 | 12-13 | 12.5 | 0.28 | 10 | 12-14 | 12.6 | 0.22 | 19 | 12-15 | 13.3 | 0.15 |
| Gill rakers | 4 | 23-26 | 24.5 | 0.64 | 9 | 19-22 | 20.7 | 0.32 | 18 | 19-25 | 21.4 | 0.36 |
| Lat. line scales | 4 | 84-86 | 85.0 | 0.57 | 9 | 78-82 | 80.1 | 0.58 | 19 | 84-92 | 86.3 | 0.47 |
| Scales above lat. line | 4 | 14-16 | 14.7 | 0.47 | 7 | 13-14 | 13.5 | 0.20 | 19 | 14-15 | 14.3 | 0.11 |
| Scales below lat. line | 4 | 9 | 9.0 | — | 7 | 8-9 | 8.4 | 0.20 | 19 | 9-10 | 9.5 | 0.11 |
| Maxillary teeth | 4 | 28 | 28.0 | — | 10 | 23-30 | 25.6 | 0.76 | 19 | 26-36 | 29.2 | 0.57 |
| Post. dentary teeth | 4 | 16-19 | 17.5 | 0.64 | 10 | 14-19 | 16.5 | 0.56 | 19 | 15-22 | 18.1 | 0.43 |
| Vertebrae | 1 | 43 | — | — | — | — | — | — | 1 | 43 | — | — |

all other species of *Acestrorhynchus* in having a very conspicuous large black spot on the dorsal fin (Fig. 7). It can also be distinguished from *A. nasutus* by its higher number of gill rakers, scales in and scales above the lateral line (table 4) and by differences in almost all body proportions (compare the means in table 6); from *A. isalineae* it differs also in having more anal-fin rays and gill rakers (table 4) and, on the average, the body less deep, the snout longer, the eye smaller, the interorbital narrower, and the pelvic fin slightly shorter (table 6).

Description

Body small (S.L. 62.0-79.0 mm), compressed and very elongate. Predorsal body profile nearly straight, only slightly convex near the occiput. Snout pointed, very elongate, a little longer than twice the orbital diameter; upper jaw much longer than lower, the first small conical tooth, the anteriormost canine and the next 2 or 3 small conical teeth



7

FIG. 7.

Acestrorhynchus maculipinna, sp. n., MZUSP 25862, SL 66.0 mm, paratype.

on the upper jaw remaining outside when the mouth is closed. Maxillary ending in a not very acute angle, its posterior toothed edge convex, with 28 small closely set conical teeth in the four specimens studied; anterior part of maxillary with 1 canine, followed by 3 conical teeth and another canine about as long as the first one. Premaxillary with 3 widely spaced canines, the second smaller than the first and third which are about the same size; first canine preceded by 1 or 2 small conical teeth; 1 to 3 small conical teeth between the first and the second canines, 3 to 5 between the second and the third and 1 small conical tooth next to the third canine. Upper part of each premaxillary with two foramina to lodge the first two canines on the dentary. Dentary with 1 small canine in front, followed by 1 large canine and 5 large conical teeth of which the third is a canine about the same size as the first; 4 to 5 very small conical teeth posterolateral to the largest canine and slightly internal to the remaining dentary teeth seem to represent a rudimentary inner row. Ectopterygoid bearing a long row of very small closely set teeth inclined posteriorly. Mesopterygoid without teeth. Spiny gill rakers, 23-26 on lower limb of first gill arch; free upper edge of each gill raker with 4 developed spines and some smaller ones below extending onto the laminar bony surface of the gill raker.

Scales relatively small, 84-86 in the lateral line; 14-16 scale rows above and 9 below the lateral line; 1 row of scales along anal-fin base extending from its origin to about the tenth branched ray.

Dorsal-fin rays ii,9; origin of dorsal fin far posterior to the midlength of the body; distal edge of dorsal fin slightly concave. Anal fin falcate anteriorly, the tip of first branched ray extending to about the base of nineteenth branched ray when the fin is adpressed; origin of anal fin under base of last dorsal-fin ray; anal-fin rays v,24-26, without spines in males. Pelvic-fin rays i,7, tip of longest ray not reaching anterior border of anus. Pectoral fins slightly longer than pelvic fins, with i,12-13 rays; tip of longest pectoral-fin ray far from pelvic-fin origin. Caudal fin lobes equally developed; principal caudal-fin rays i,17,i.

Color in alcohol light brown on top of head and dorsum, light yellow to pale on the sides and below; a dark midlateral stripe extending from tip of snout to caudal base, darker on the snout and slightly enlarged posteriorly on midsurface of caudal peduncle; a second longitudinal dark stripe, extending from about posterior end of maxillary to lower surface of caudal peduncle, very inconspicuous anteriorly and becoming enlarged and more intense above anal-fin base; a very conspicuous black spot on basal part of dorsal fin extending to about the middle height of the fin; another black spot longitudinally elongate on base of caudal fin; a whitish area above and below black caudal spot (probably red in life). Tip of dorsal fin, lobes of caudal fin and anal fin with scattered black chromatophores; remaining fins hyaline.

The meristic data are presented in table 4 and the morphometrics in table 6.

Distribution

A. maculipinna has been collected so far in Rio Preto da Eva, a small stream in the Amazon basin, between Manaus and Itacoatiara (Fig. 9).

Acestrorhynchus grandoculis sp. n. (Fig. 8)

Holotype: MZUSP 25863 (female, 100.0 mm S.L.), collected at the mouth of Rio Urubaxi in Rio Negro, State of Amazonas, Brazil, 6 February 1980 by Michael Goulding.

Paratypes: MZUSP 25864-76 (13, 68.0-107.0 mm); USNM 228085 (1 male, 87.0 mm); MNHN 1982-1113 (1 female, 100.0 mm), all taken with the holotype. MHNG 2098.20-22 (3, 104.0-117.0 mm), collected in Lake Cururará in Rio Caurés, a tributary of the Rio Negro, State of Amazonas, Brazil, 25 December 1976 by W. Junk, J. Géry & Sergio Anibal. MZUSP 25877-886 (10, 59.0-86.0 mm); USNM 228086 (1 male, 85.0 mm), collected at Ararirá in Rio Negro, State of Amazonas, Brazil, 6 December 1979 by Michael Goulding. MZUSP 25887-910 (24, 68.0-98.0 mm); USNM 228083 (1 female, 91.0 mm), collected at Maraiúá in Rio Negro, State of Amazonas, Brazil, October 1979 by Michael Goulding. MZUSP 25917-928 (12, 52.0-87.0 mm); USNM 228084 (1, 68.0 mm), collected in Paraná do Jacaré, Rio Negro, State of Amazonas, Brazil, 7 October 1979 by Michael Goulding. MZUSP 25912-16 (5, 60.0-80.0 mm), collected in Rio Maraiúá, a tributary of the Rio Negro, State of Amazonas, Brazil, 13 October 1979 by Michael Goulding. MZUSP 25929-30 (2, 75.0 and 79.0 mm), collected in a lake in the Rio Negro, above Rio Urubaxi, State of Amazonas, Brazil, 6 February 1980 by Michael Goulding.

The following paratype material was examined but meristic and morphometric data of specimens are not included in the description: MZUSP 25931-33 (3, 68.0-74.0 mm), collected at Massarabi in Rio Negro, State of Amazonas, Brazil, 18 October 1979 by Michael Goulding.

TABLE 5.
 Meristic data for *Acestrorhynchus grandoculis* sp. n. *A. guianensis* introduced for comparisons.

| | <i>A. grandoculis</i> | | | | <i>A. guianensis</i> | | | |
|------------------------|-----------------------|-------|------|------|----------------------|--------|------|------|
| | N | Range | Mean | S | N | Range | Mean | S |
| Anal fin rays | 75 | 23-29 | 25.3 | 0.13 | 10 | 25-30 | 27.0 | 0.49 |
| Pectoral fin rays | 76 | 14-17 | 15.5 | 0.08 | 10 | 15-16 | 15.3 | 0.15 |
| Gill rakers | 76 | 18-24 | 21.2 | 0.15 | 10 | 20-24 | 21.3 | 0.39 |
| Lat. line scales | 67 | 74-85 | 80.3 | 0.24 | 10 | 93-102 | 96.3 | 0.93 |
| Scales above lat. line | 26 | 16-17 | 16.1 | 0.07 | 10 | 17-19 | 18.3 | 0.21 |
| Scales below lat. line | 50 | 10-11 | 10.2 | 0.06 | 10 | 14-15 | 14.4 | 0.16 |
| Post. dentary teeth | 76 | 12-18 | 15.2 | 1.14 | 10 | 10-14 | 12.1 | 0.43 |
| Maxillary teeth | 76 | 30-45 | 36.7 | 0.38 | 10 | 16-26 | 21.8 | 1.09 |
| Vertebrae | 5 | 42-43 | 42.4 | 0.24 | — | — | — | — |

TABLE 6.
Morphometric data for the new species of *Acestrorhynchus*.
Fifth, sixth and seventh measurements are in percentage of the head length. *A. nasutus* introduced for comparisons.

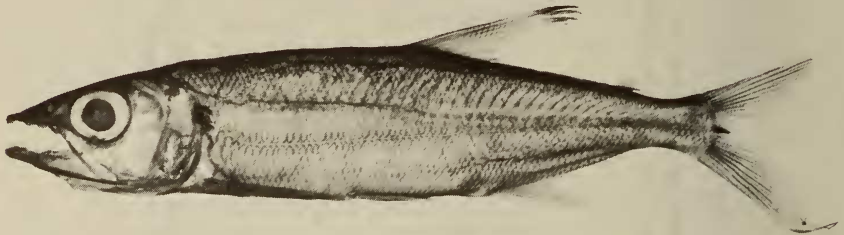
| | <i>A. maculipinna</i> | | | | <i>A. nasutus</i> | | | | <i>A. isalineae</i> | | | |
|-----------------------|-----------------------|-----------|------|------|-------------------|-----------|------|------|---------------------|------------|------|------|
| | N | Range | Mean | S | N | Range | Mean | S | N | Range | Mean | S |
| Standard length (mm) | 4 | 62.0-79.0 | 67.5 | 3.92 | 10 | 48.0-69.0 | 57.4 | 2.01 | 19 | 52.0-101.0 | 77.1 | 2.80 |
| Trunk length | 4 | 67.7-68.2 | 67.9 | 0.14 | 10 | 61.8-66.1 | 64.2 | 0.42 | 19 | 65.7- 68.1 | 66.8 | 0.18 |
| Head length | 4 | 31.7-32.2 | 32.0 | 0.14 | 10 | 33.9-36.8 | 35.7 | 0.43 | 19 | 31.8- 34.2 | 32.2 | 0.18 |
| Body depth | 4 | 13.6-15.2 | 14.2 | 0.36 | 8 | 12.5-19.7 | 17.1 | 0.94 | 19 | 14.4- 17.6 | 16.4 | 0.20 |
| Snout length | 4 | 47.0-47.6 | 47.4 | 0.12 | 10 | 42.8-48.0 | 46.2 | 0.75 | 19 | 41.1- 45.4 | 43.2 | 0.29 |
| Orbital diameter | 4 | 21.4-22.5 | 21.9 | 0.30 | 10 | 22.8-30.0 | 26.4 | 0.71 | 19 | 22.6- 26.3 | 24.1 | 0.22 |
| Interorbital distance | 4 | 12.5-15.0 | 13.4 | 0.54 | 10 | 13.5-20.0 | 17.2 | 0.73 | 19 | 13.0- 16.6 | 14.8 | 0.27 |
| Pectoral fin length | 4 | 12.6-13.6 | 13.1 | 0.23 | 8 | 12.5-15.9 | 14.8 | 0.60 | 19 | 12.5- 14.2 | 13.4 | 0.10 |
| Pelvic fin length | 4 | 11.3-11.9 | 11.5 | 0.14 | 9 | 11.5-14.5 | 13.1 | 0.33 | 19 | 11.5- 12.8 | 12.2 | 0.08 |
| Predorsal distance | 4 | 64.5-65.1 | 64.8 | 0.16 | 10 | 65.2-69.2 | 67.7 | 0.52 | 19 | 64.4- 67.7 | 66.1 | 0.22 |
| Prealanal distance | 4 | 70.1-71.4 | 70.9 | 0.27 | 10 | 69.2-75.4 | 73.2 | 0.64 | 19 | 71.1- 74.4 | 72.6 | 0.20 |
| Caudal ped. depth | 4 | 4.7- 5.7 | 5.3 | 0.21 | 8 | 4.8- 9.1 | 7.4 | 0.56 | 19 | 5.1- 6.3 | 5.8 | 0.07 |

TABLE 7.
Morphometric data for *Acestrorhynchus grandoculis* sp. n.
Fifth, sixth and seventh measurements are in percentage of the head length. *A. guttatenis* introduced for comparisons.

| | <i>A. grandoculis</i> | | | | <i>A. guttatenis</i> | | | |
|-----------------------|-----------------------|------------|------|------|----------------------|------------|-------|------|
| | N | Range | Mean | S | N | Range | Mean | S |
| Standard length (mm) | 76 | 52.0-117.0 | 80.8 | 1.44 | 10 | 66.0-160.0 | 103.3 | 10.5 |
| Trunk length | 76 | 67.6- 70.6 | 69.0 | 0.08 | 10 | 65.1- 69.2 | 68.0 | 0.43 |
| Head length | 76 | 29.4- 32.3 | 30.9 | 0.08 | 10 | 29.3- 34.8 | 31.9 | 0.45 |
| Body depth | 75 | 17.9- 22.8 | 20.8 | 0.11 | 10 | 19.0- 23.1 | 21.3 | 0.45 |
| Snout length | 76 | 26.3- 33.3 | 29.5 | 0.17 | 10 | 36.1- 43.4 | 39.1 | 0.69 |
| Orbital diameter | 76 | 31.1- 38.6 | 34.9 | 0.20 | 10 | 25.5- 31.2 | 29.2 | 0.57 |
| Interorbital distance | 76 | 18.2- 26.6 | 21.7 | 0.18 | 10 | 20.0- 23.0 | 21.6 | 0.30 |
| Pectoral fin length | 75 | 14.4- 18.6 | 17.1 | 0.09 | 10 | 16.6- 20.0 | 18.3 | 0.33 |
| Pelvic fin length | 76 | 12.5- 17.2 | 15.1 | 0.09 | 10 | 13.6- 17.4 | 15.8 | 0.35 |
| Predorsal distance | 75 | 56.4- 60.6 | 58.5 | 0.11 | 10 | 63.1- 68.1 | 64.8 | 0.48 |
| Preal distance | 75 | 68.1- 73.5 | 70.7 | 0.13 | 10 | 73.6- 77.2 | 74.9 | 0.34 |
| Caudal ped. depth | 76 | 5.6- 8.2 | 6.8 | 0.05 | 10 | 6.4- 9.1 | 7.6 | 0.23 |

Diagnosis

A. grandoculis has the small, sometimes indistinct but very peculiar dark blotch at the origin of the lateral line behind the opercle that distinguish *A. microlepis* (Schomburgk) and *A. guianensis* Menezes from the remaining species of *Acestrorhynchus*. It is also similar to these species in body shape and size, but differs from both in having larger scales (74-85 scales in the lateral line versus 93-102 in *A. guianensis* and 108-122 in *A. microlepis*). It differs markedly from *A. guianensis* in its lower number of scales in, above and below lateral line, lower number of teeth on the posterior part of the dentary and higher number of maxillary teeth (table 5); also it has the eye much larger, the snout shorter and shorter predorsal and preanal distances (table 7).



8

FIG. 8.

Acestrorhynchus grandoculis, sp. n., MZUSP 25864, SL 100.0 mm, paratype, female.

The most remarkable feature of this species is its enormous eye which in proportion to the head length is larger than in any other species of the genus.

Description

Body moderately large (S.L. 52.0-117.0 mm), compressed and moderately elongate. Dorsal body profile almost evenly convex from tip of snout to dorsal-fin origin. Snout acute, not very elongate, about as long as orbital diameter; lower jaw slightly shorter than upper, the two anteriormost canines on the upper jaw remaining outside when the mouth is fully closed. Maxillary anteriorly with 1 canine followed by 3 (rarely 2 or 4) small conical teeth, another canine and another small conical tooth; posterior toothed edge of maxillary convex with 30-45 small closely set conical teeth; teeth on posterior maxillary edge more numerous in large specimens; posterior tip of maxillary rounded. Premaxillary with 1 canine anteriorly, followed by 6-10 small conical teeth, another canine slightly longer than the first and another small conical tooth similar in size to the anterior ones. Upper lateral part of each premaxillary with two foramina to lodge the first two teeth of the dentary. Dentary with 1 conical tooth anteriorly, followed by 1 well-developed canine and 4-5 conical teeth, of which the first and last are about the same size as the anteriormost tooth and the intermediate 2 or 3 are larger but not quite

as large as the anterior canine; 2-6 very small conical teeth, posterolateral to the large canine and slightly internal to the remaining dentary teeth, seem to represent a rudimentary inner row. Ectopterygoid with a row of small closely set conical teeth, highly variable in number (37-62). Mesopterygoid with a small oval shaped patch of very small conical teeth. Lower limb of first gill arch with 18-24 spiny gill rakers; free upper edge of each gill raker bearing 1 or 2 developed spines and some smaller ones on the sides and below, extending onto the laminar basal portion of the gill raker.

Scales relatively large, 74-85 in the lateral line, 16-17 scale rows between lateral line and dorsal-fin origin, 10-11 between lateral line and anal-fin origin; row of scales along anal-fin base extending from anal-fin origin to about fourteenth branched ray.

Dorsal fin with ii,9 rays, its distal edge concave; origin of dorsal fin behind the midlength of the body. Anal fin strongly falcate, the tips of first branched rays extending posterior to anal-fin base when fin is adpressed; origin of anal fin slightly behind a vertical line through end of dorsal-fin base; anal-fin rays v,23-29, without hooks or spines in males. Pelvic-fin rays i,7, tip of longest ray extending beyond anus, but not reaching anal-fin origin. Pectoral fins longer than pelvic fins, with i,14-17 rays; tip of longest pectoral-fin ray not reaching pelvic-fin origin. Lower caudal-fin lobe slightly longer than upper; principal caudal-fin rays i,17,i.

Color in alcohol light brown, a little darker on top of head, snout and dorsum; abdominal region of body pale; a black stripe running from occiput to upper surface of caudal peduncle; a small black spot at origin of lateral line, behind the opercle; a longitudinally oblong black spot on base of caudal fin, extending onto bases of middle caudal rays; all fins with scattered melanophores; tip of dorsal fin black.

The meristic data are presented in table 5 and the morphometrics in table 7.

Distribution

A. grandoculis has been collected so far only in the Rio Negro and its tributaries (Fig. 9).

COMMENTS ON THE SYSTEMATICS OF THE ACESTRORHYNCHINAE

MENEZES (1969) concluded that *Paroligosarcus* Campos & Trewavas, 1949, *Oligosarcus* Günther, 1864, and *Acestrorhynchus* Eigenmann & Kennedy, 1903, are very closely related and included them in the tribe Acestrorhynchini. Later on the same author (1976: 20) raised the group to subfamily level. ROBERTS (1969: 440) compared *Acestrorhamphus* Eigenmann & Kennedy, 1903 (= *Oligosarcus*) with *Acestrorhynchus* and stated that the former "... could have given rise directly to *Acestrorhynchus*".

The reexamination of some osteological and other morphological characters within the group indicates that the relationships of the genera have to be reconsidered. A detailed analysis of characters leading to the redefinition of Acestrorhynchinae will be presented in a forthcoming paper, but we think some comments on the preliminary findings are necessary.

The monotypic genus *Paroligosarcus* was primarily separated from *Oligosarcus* on the basis of its tricuspid and pentacuspid teeth on the jaws (versus conical to weakly tricuspid in *Oligosarcus*). We feel that "*Paroligosarcus*" *pinto*i (Campos) is indeed very closely related to all species of *Oligosarcus* in most if not all osteological and other morphological characters and that the presence of one or two additional lateral cusps on some teeth is useful only to distinguish it as a different species. Based on these tooth

characters "*P.*" *pintoi* appears to be the sister group of other species of *Oligosarcus*. *Paroligosarcus* must be included then in the synonymy of *Oligosarcus* and not considered a distinct genus.

In discussing the relationships of *Paroligosarcus*, *Oligosarcus* and *Acestrorhynchus*, MENEZES (1969: 80) considered the three genera as forming a distinct and homogeneous group based on a set of characters apparently not found as a whole in any genus or group of genera. None of these characters, however, is unique to the group and the main character by which *Acestrorhynchinae* has been distinguished from other characid subfamilies, that is the presence of teeth on the ectopterygoid, is found in some other apparently unrelated genera such as *Serrasalmus* Lacepède, 1803, *Moralesia* Fowler, 1943, etc. Preliminary investigation of some characters reveals a remarkable difference between the species of *Oligosarcus* (*Paroligosarcus* included) and the species of *Acestrorhynchus*. In the *Oligosarcus* species sexual dimorphism is quite evident and represented by the presence of spines on the anal fin of male specimens; the gill rakers are relatively narrow and long, not spiny; the ectopterygoid teeth are tricuspid or nearly so; the rhinosphenoid bone is never in contact with the parasphenoid; the supraorbital is absent (the indication of this bone in *Paroligosarcus pintoi* and *Oligosarcus* by MENEZES (1969) is in error; reexamination of all the specimens revealed that the upper edge of the orbit is formed by the frontal bone itself); a branch of the cephalic laterosensory canal is never present on the premaxillary; and there are no teeth on the mesopterygoid. In the *Acestrorhynchus* species there are no spines on anal fin of male specimens; the gill rakers are flat laminar bony structures covered with spines; the ectopterygoid teeth are all conical; the rhinosphenoid is in contact with the parasphenoid; the supraorbital is a well-formed, distinct bone; there is an extension of the cephalic laterosensory canal onto the premaxillary bone; and mesopterygoid teeth have been found at least in six species.

At the moment there is not enough information available to study the relationships of *Oligosarcus* and *Acestrorhynchus* with characid genera. *Acestrorhynchinae* may not be a monophyletic group, but the differences mentioned above do not preclude the possibility of *Oligosarcus* being the sister group of *Acestrorhynchus*. Until evaluation of characters through outgroup comparison can be made, however, it seems premature not to consider the group monophyletic.

As a result of the description of the new species and of the additional observations made in this paper, a modification of the original keys to species of the genera presented by Menezes (1969) is required.

KEY TO THE SPECIES OF *OLIGOSARCUS*

1. Scales relatively large, 36-40 in the lateral line 2
- Scales relatively small, 44-83 in the lateral line 3
2. Teeth tricuspid on the premaxillary and maxillary, tricuspid to pentacuspoid on the dentary; lower jaw slightly longer than upper when the mouth is closed; anal-fin rays iv-v, 25-28 *O. pintoi* Campos, 1945
- Teeth conical to weakly tricuspid on the premaxillary, maxillary and dentary; lower jaw slightly shorter than upper when the mouth is closed; anal-fin rays iv-v, 24-26 *O. planaltinae* sp. n.
3. Anal fin short, with iv, 17-19 rays *O. schindleri* sp. n.

- Anal fin relatively long, with iv-v, 20-31 rays 4
4. Snout convex, blunt, usually shorter than orbital diameter in large specimens; predorsal profile strongly convex from occiput to dorsal fin origin; lower jaw about as long as upper when the mouth is closed 5
- Snout conical, acute, usually longer than orbital diameter in large specimens; predorsal profile nearly straight from occiput to dorsal-fin origin; lower jaw shorter than upper when the mouth is closed 7
5. 10-11 scale rows from lateral line to origin of dorsal fin; 9-10 from lateral line to origin of anal fin *O. bolivianus* (Fowler, 1940)
- 9 scale rows from lateral line to origin of dorsal fin; 7-8 from lateral line to origin of anal fin 6
6. 43 scales in the lateral line; 7 scale rows from lateral line to origin of anal fin *O. argenteus* Günther, 1864
- 46-49 scales in the lateral line; 7-8 scale rows from lateral line to origin of anal fin *O. meadi* Menezes, 1969
7. 8-10 scale rows from lateral line to origin of dorsal fin, 6-8 from lateral line to origin of anal fin 8
- 10-19 scale rows from lateral line to origin of dorsal fin, 8-15 from lateral line to origin of anal fin 10
8. 44-48 scales in the lateral line; 8 scale rows from lateral line to origin of dorsal fin *O. macrolepis* (Steindachner, 1876)
- 47-54 scales in the lateral line; 9-10 scale rows from lateral line to origin of dorsal fin 9
9. Snout short, about 22.0-29.0% of head length; vertebrae 38 *O. paranensis* sp. n.
- Snout long, about 26.5-31.0% of head length; vertebrae 39 *O. longirostris* sp. n.
10. 75-83 scales in the lateral line; 17-19 scale rows from lateral line to origin of dorsal fin *O. robustus* Menezes, 1969
- 51-82 scales in the lateral line; 10-15 scale rows from lateral line to origin of dorsal fin 11
11. 51-71 scales in the lateral line; 10-13 scale rows from lateral line to origin of dorsal fin, 8-10 from lateral line to origin of anal fin *O. jenynsii* (Günther, 1864)
- 68-82 scales in the lateral line; 14-15 scale rows from lateral line to origin of dorsal fin, 10-13 from lateral line to origin of anal fin *O. hepsetus* (Cuvier, 1829)

KEY TO THE SPECIES OF *ACESTORRHYNCHUS*

1. Lateral line scales with two divergent branches of the laterosensory canal *A. heterolepis* (Cope, 1878)
- Lateral line scales with only one branch of the laterosensory canal which is inclined either upward or downward 2

2. General color pattern consisting of one midlateral dark stripe running from tip of snout to caudal base and another dark stripe extending from about end of maxillary to lower surface of caudal peduncle, inconspicuous anteriorly and wider above anal-fin base 3
- General color pattern not as above 5
3. A very distinct black spot on anterior basal part of dorsal fin *A. maculipinna* sp. n.
- No distinct black spot on anterior basal part of dorsal fin 4
4. 78-82 scales in the lateral line *A. nasutus* Eigenmann, 1912
- 84-92 scales in the lateral line *A. isalineae* sp. n.
5. Opercle with two dark patches, the upper separated from the lower by a very narrow pale stripe; 140-175 scales in the lateral line *A. falcirostris* (Cuvier, 1819)
- No dark patches on the opercle; 74-122 scales in the lateral line 6
6. Humeral region with a black spot or blotch 7
- Humeral region without black spot or blotch 12
7. A large black blotch at the humeral region 8
- A small sometimes indistinct black spot at the humeral region near the origin of the lateral line 10
8. Black blotch at the humeral region oval-shaped, vertically elongate; 80-96 scales in the lateral line *A. falcatus* (Bloch, 1794)
- Black blotch at the humeral region nearly round, not vertically elongate; 89-115 scales in the lateral line 9
9. 89-102 scales in the lateral line; 23-26 scale rows from lateral line to origin of anal fin, 13-16 from lateral line to origin of anal fin *A. lacustris* (Reinhardt, 1874)
- 98-115 scales in the lateral line; 27-34 scale rows from lateral line to origin of dorsal fin, 15-18 from lateral line to origin of anal fin *A. altus* Menezes, 1969
10. 74-85 scales in the lateral line; 10-11 scale rows from lateral line to origin of anal fin; eye very large, the orbital diameter about 31.0-38.5% of head length *A. grandoculis* sp. n.
- 93-122 scales in the lateral line; 13-18 scale rows from lateral line to origin of anal fin; eye not very large, the orbital diameter about 25.0-31.0% of head length 11
11. 108-122 scales in the lateral line; 20-22 scale rows from lateral line to origin of dorsal fin, 15-18 from lateral line to origin of anal fin *A. microlepis* (Schomburgk, 1841)
- 93-106 scales in the lateral line; 17-19 scale rows from lateral line to origin of dorsal fin, 13-15 from lateral line to origin of anal fin *A. guianensis* Menezes, 1969
12. A distinct black band on sides of body, from upper end of opercle to caudal base; anal fin rays v, 23-27; 92-103 scales in the lateral line; 18 scale rows from lateral line to origin of dorsal fin, 12 from lateral line to origin of anal fin *A. britskii* Menezes, 1969



FIG. 9.

Geographic distribution of the new species of *Acestorhynchus* and *Oligosarcus*. 1: Rio Tietê; 2: Córrego das Camélias; 3: Represa de Taiapuêba; 4: Salesópolis; 5: Rio Cachoeira; 6: Represa de Atibainha; 7: Arroio Guaçu; 8: Rio São Francisco Verdadeiro; 9: Rio São Francisco Falso; 10: Rio Ocoi; 11: Rio das Antas; 12: Rio Iguazu; 13: Cochabamba; 14: San Francisco de Chipiriri; 15: Rio Marauá; 16: Above Rio Urubaxi; 17: Mouth of Rio Urubaxi; 18: Ararirá; 19: Rio Caurés; 20: Paraná do Jacaré; 21: Rio Preto de Eva; 22: Tributary of Rio dos Marmelos; 23: Córrego Planaltina. For more detailed data about localities see list of type-specimens.

- Black band absent on sides of body; a rather narrow dark stripe from upper end of opercle to caudal base; anal fin rays v, 21-25; 74-86 scales in the lateral line; 12-14 scale rows from lateral line to origin of dorsal fin, 8-10 from lateral line to origin of anal fin *A. minimus* Menezes, 1969

NEW RECORDS OF DISTRIBUTION

Locality data from specimens recently collected extend the previously known distribution of the following species:

Oligosarcus pintoi — BRAZIL, State of São Paulo: Córrego Itapura-Mirim, tributary of Rio Tietê, Ilha Solteira; Marimbondo, Rio Grande; pond near the mouth of Córrego do Abrigo, Jupuí; Córrego do Pernilongo, on the road to Ilha Solteira; Lagoa São Vicente, old road Porto Ferreira-Santa Rita, km 4; Usina do Limoeiro, Rio Pardo; Estação Marilha, km 10, Baurú; Represa de São José do Rio Preto. State of Minas Gerais: stream tributary of Rio das Areias, Município de Aceburgo.

Oligosarcus bolivianus — ARGENTINA: Esperanza La Cienega, Provincia de Jujuy. BOLIVIA: Rio Tolomosa, Tarija.

Acestrorhynchus microlepis — BRAZIL, State of Pará: Rio Curuá-Una. State of Amazonas: Lago Tupé, Rio Negro; Rio Madeira near Humaitá; Rio Madeira in Guajará Mirim; Rio Purus; upper Rio Juruena.

Acestrorhynchus nasutus — BRAZIL, State of Pará: Igarapé of Rio Curuá Una. State of Amazonas: Rio Caurés, tributary of Rio Negro; Rio Cuieiras, tributary of Rio Negro; Arquipélago of Anavilhanas, Rio Negro; Igarapé Tarumã, near Manaus.

Acestrorhynchus falcatus — BRAZIL, State of Amazonas: Rio 7 de Setembro, tributary of Rio Xingu; Rio Madeira basin near Humaitá; Rio Purus. State of Mato Grosso: headwaters of Rio das Mortes, km 100 of the road BR 364, Município de Jaciara. PERU: Distrito de Loreto; Rio Pastaza. PARAGUAY: Puerto Max.

Acestrorhynchus falcirostris — BRAZIL, State of Pará: Represa de Curuá Una. State of Amazonas: Rio Madeira at Humaitá; Lago Tupé in Rio Negro; Rio Caurés, tributary of Rio Negro; Igarapé Tarumã, near Manaus.

REFERENCES

- MENEZES, N. A. 1969. Systematics and evolution of the tribe Acestrorhynchini (Pisces, Characidae). *Arqs. Zool. Est. S. Paulo*, 18 (1-2): 1-150, figs. 1-104.
- 1976. On the Cynopotaminae, a new subfamily of the Characidae (Osteichthyes, Characoidei). *Arqs. Zool. Est. S. Paulo*, 28 (2): 1-91.
- ROBERTS, T. R. 1969. Osteology and relationships of Characoid fishes, particularly the genera *Hepsetus*, *Salminus*, *Hoplias*, *Ctenolucius*, and *Acestrorhynchus*. *Proc. Calif. Acad. Sci.* 36 (15): 391-500, 60 figs.